Fig. 1A

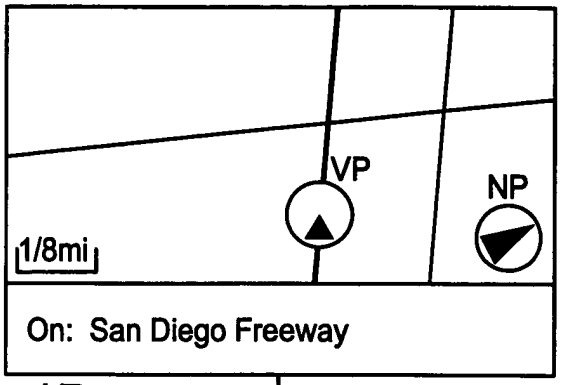


Fig. 1B

Dest	Find Destination by
Address	
Intersection	
Point of Interest	
Map Cursor	
Recent Route	
Address Book	
Today's Plan	

Fig. 1C

Dest	Find Point of Interest by
Place Name	
Place Type	

Fig. 1D

Dest	Select Category
ATM	
BANK	
GAS STATION	
HOSPITAL	
MOVIE THEATER	
RESTAURANT	
VETERINARIAN	

Fig. 1E

Dest	Select Name
Genkai 15435 Jeffrey Rd. Irvine, CA (949) 786-3420	
Pizza Hut	
Genaki	
Hard Rock Cafe	
Sushi Boy	

Fig. 1F

Confirm Route
Genkai 15435 Jeffrey Rd. Irvine, CA (949) 786-3420
By Quickest Route Method
OK to Proceed
Options

Fig. 1G

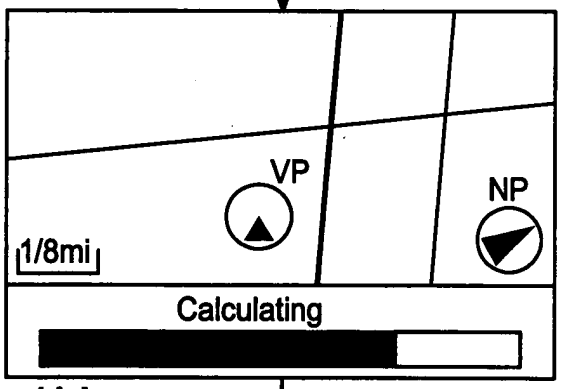


Fig. 1H

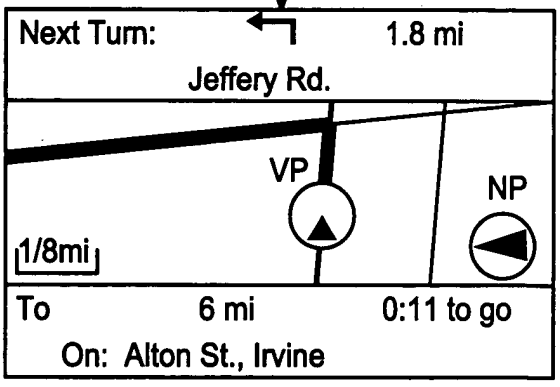


Fig. 2A

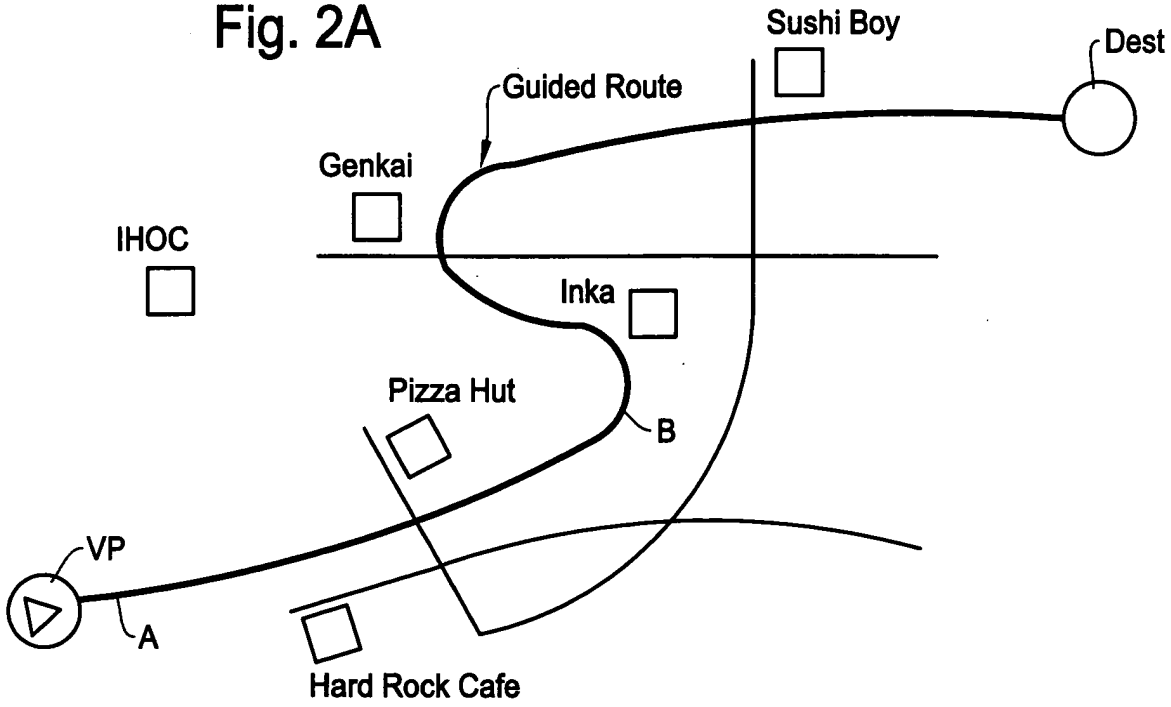


Fig. 2B

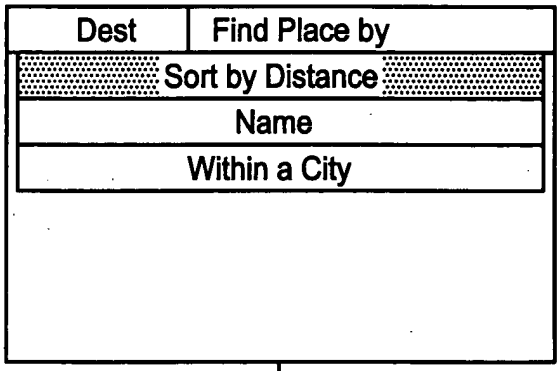


Fig. 2C

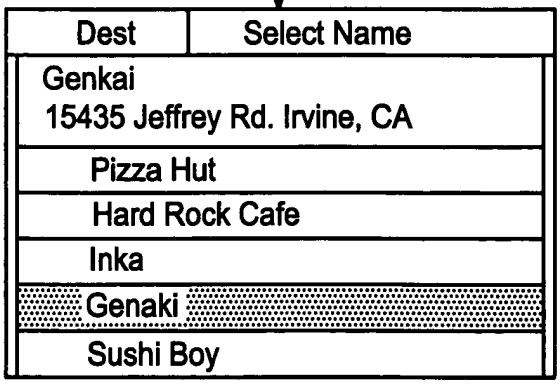


Fig. 2D

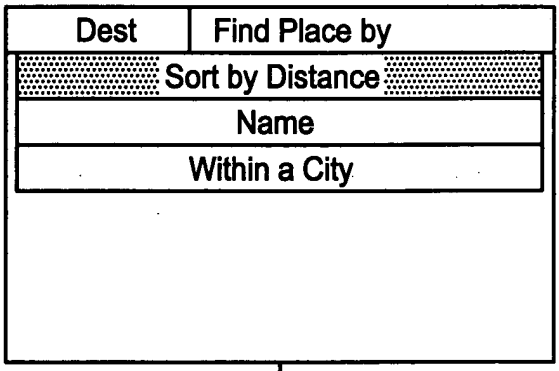


Fig. 2E

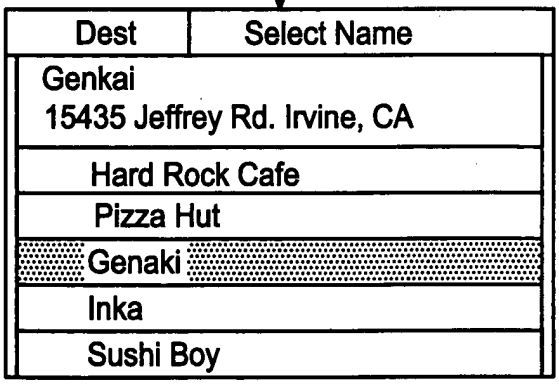


Fig. 3

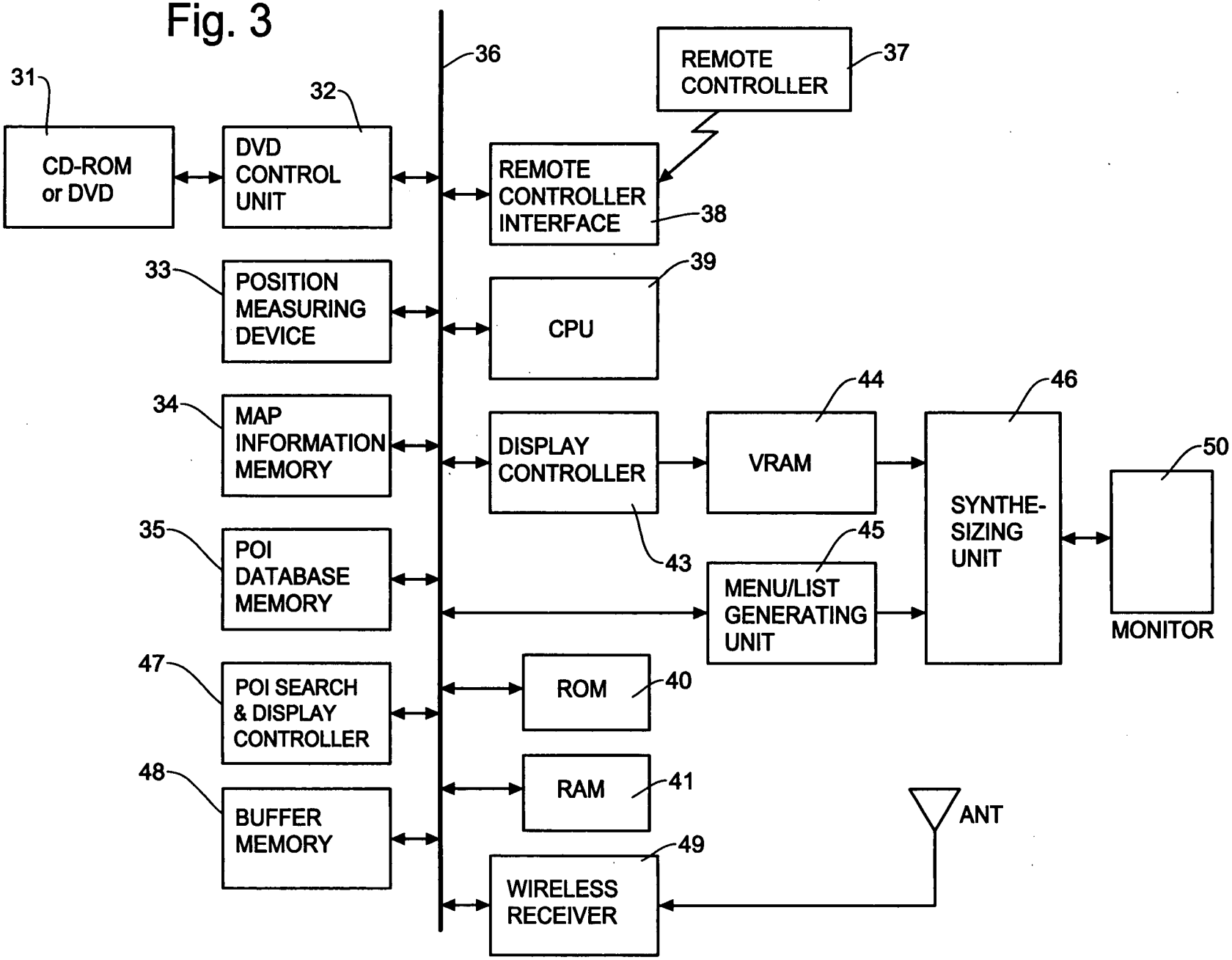

31
CD-ROM or DVD
32
DVD CONTROL UNIT
36
REMOTE CONTROLLER
37
REMOTE CONTROLLER INTERFACE
38
33
POSITION MEASURING DEVICE
39
CPU
34
MAP INFORMATION MEMORY
44
46
DISPLAY CONTROLLER
VRAM
SYNTHE-SIZING UNIT
50
43
45
35
POI DATABASE MEMORY
MENU/LIST GENERATING UNIT
MONITOR
47
POI SEARCH & DISPLAY CONTROLLER
ROM
40
48
BUFFER MEMORY
RAM
41
ANT
49
WIRELESS RECEIVER

Fig. 4

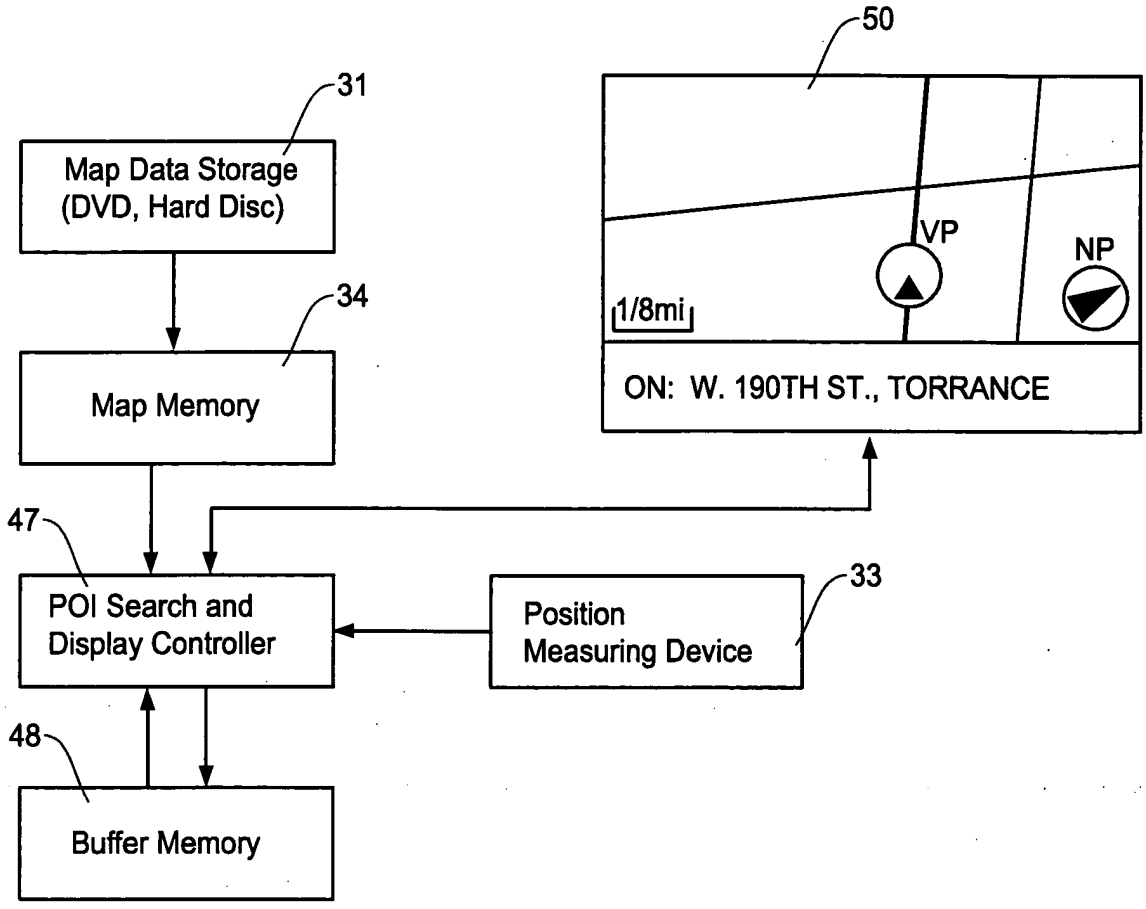

50
31
Map Data Storage
(DVD, Hard Disc)
34
Map Memory
47
POI Search and
Display Controller
48
Buffer Memory
Position
Measuring Device
33
VP
NP
1/8mi
ON: W. 190TH ST., TORRANCE

Fig. 5A

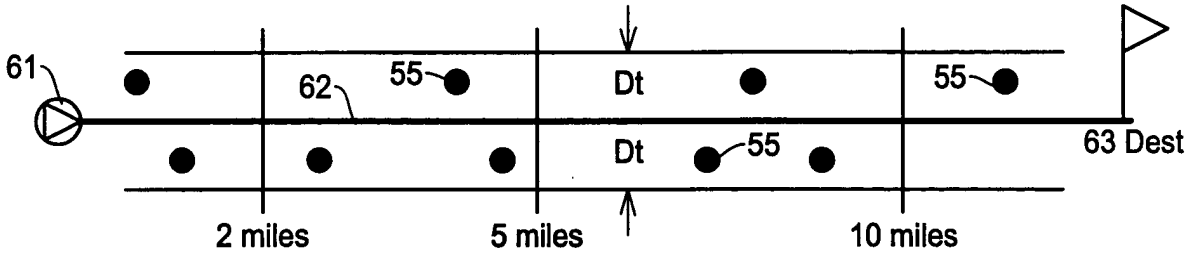

61
62
55
Dt
55
Dt
55
63 Dest
2 miles
5 miles
10 miles

Fig. 5B

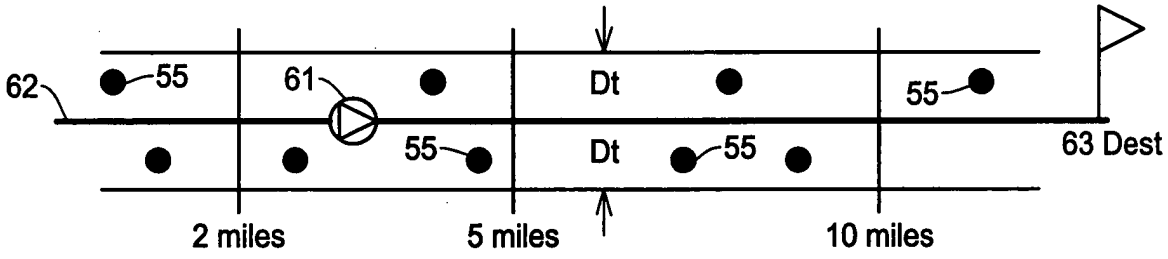

62
55
61
Dt
55
55
Dt
55
63 Dest
2 miles
5 miles
10 miles

Fig. 6A

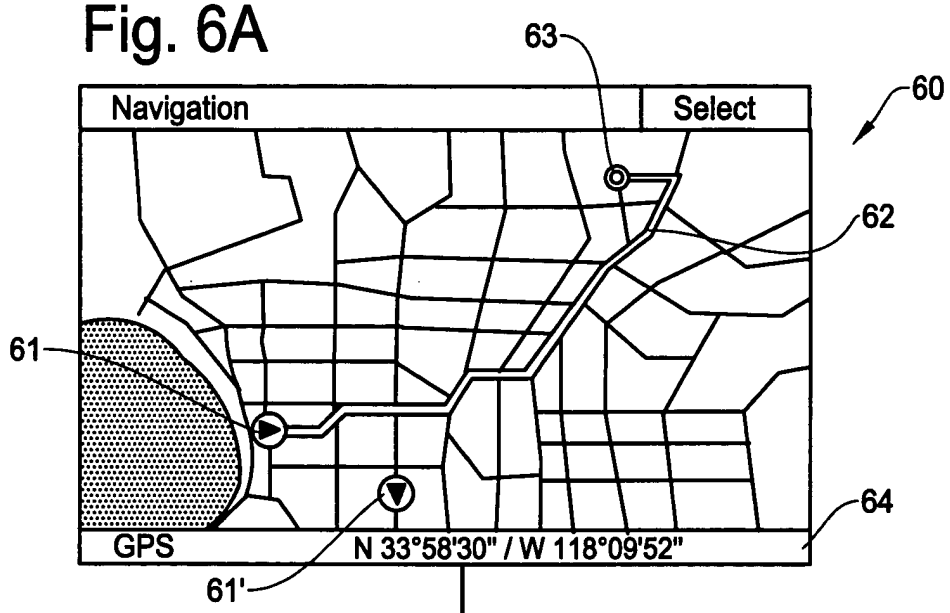

63
60
Navigation
Select
62
61
64
GPS
N 33°58'30" / W 118°09'52"
61'

Fig. 6B

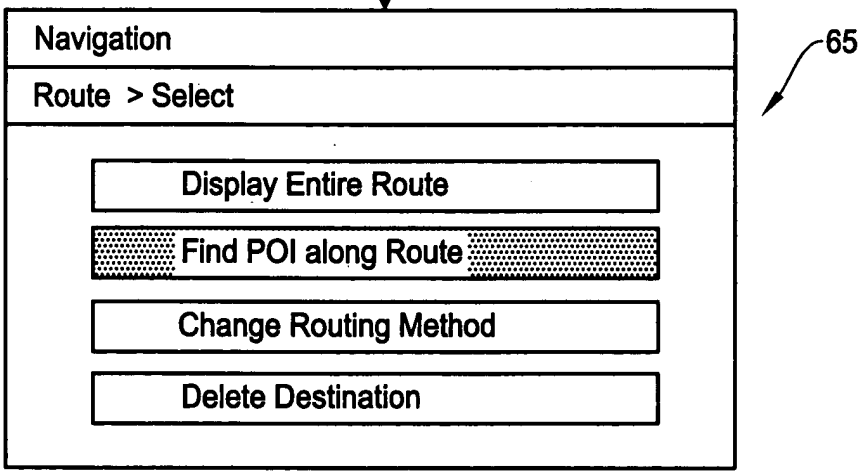

65
Navigation
Route > Select
Display Entire Route
Find POI along Route
Change Routing Method
Delete Destination

Fig. 6C

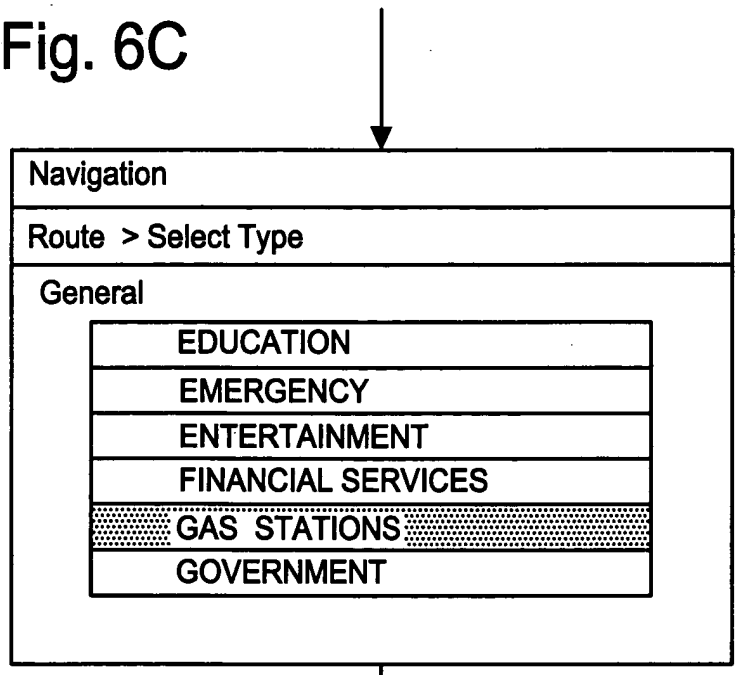

Navigation
Route > Select Type
General
EDUCATION
EMERGENCY
ENTERTAINMENT
FINANCIAL SERVICES
GAS STATIONS
GOVERNMENT
66

Fig. 6D

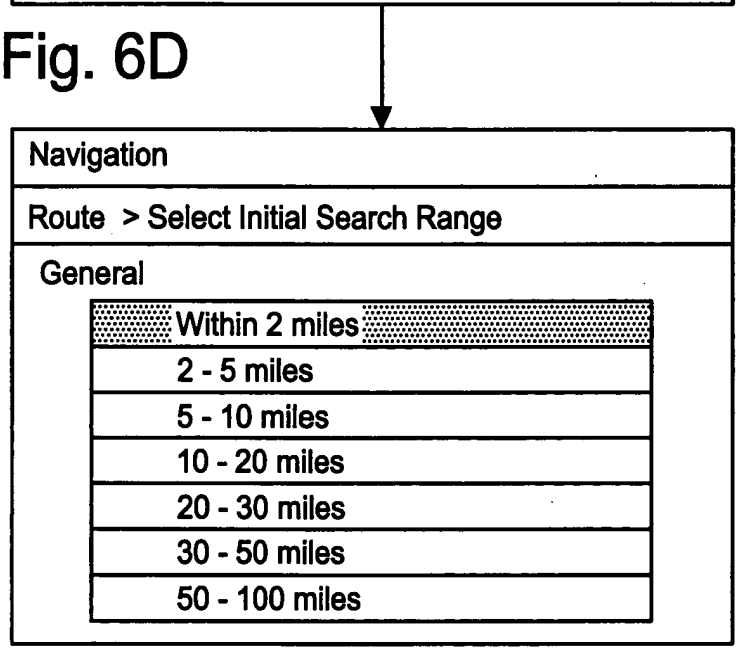

Navigation
Route > Select Initial Search Range
General
Within 2 miles
2 - 5 miles
5 - 10 miles
10 - 20 miles
20 - 30 miles
30 - 50 miles
50 - 100 miles
67

Fig. 6E

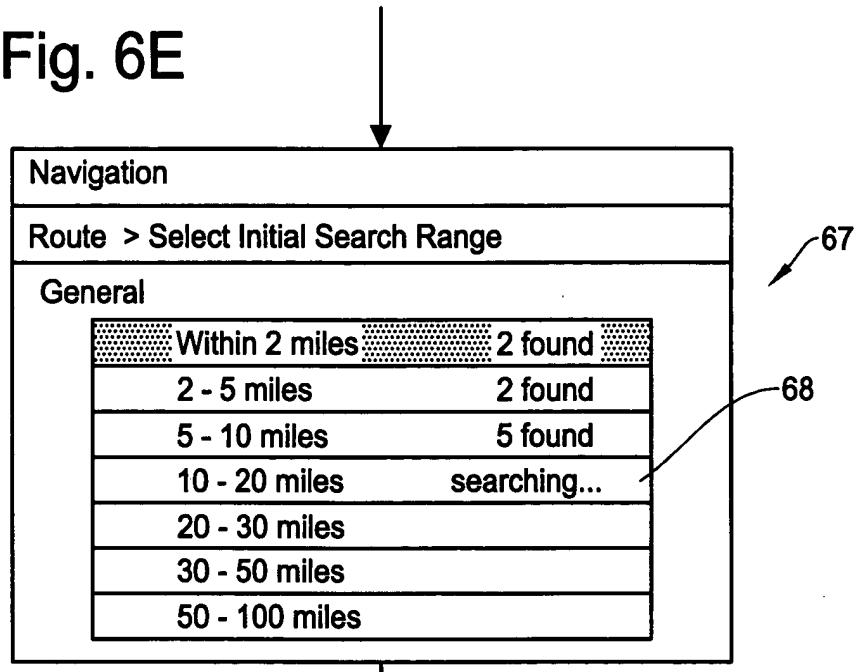

Navigation
Route > Select Initial Search Range
General
Within 2 miles 2 found
2 - 5 miles 2 found
5 - 10 miles 5 found
10 - 20 miles searching...
20 - 30 miles
30 - 50 miles
50 - 100 miles
67
68

Fig. 6F

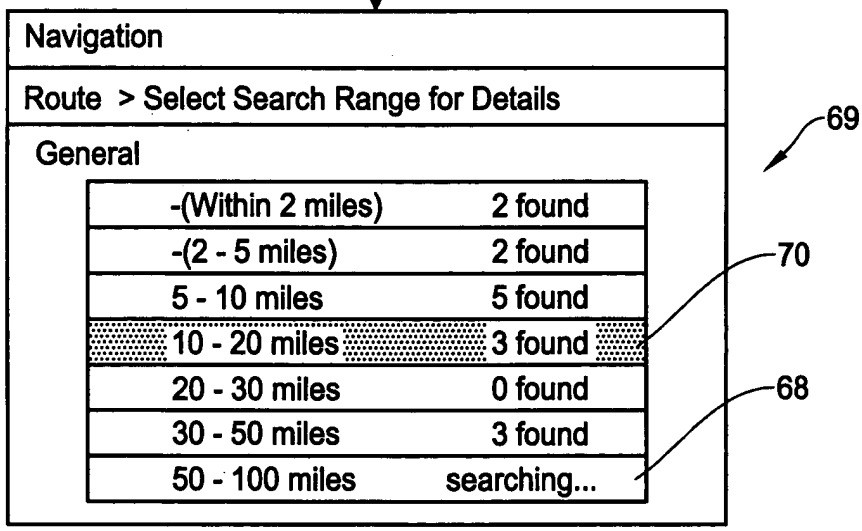

Navigation
Route > Select Search Range for Details
General
-(Within 2 miles) 2 found
-(2 - 5 miles) 2 found
5 - 10 miles 5 found
10 - 20 miles 3 found
20 - 30 miles 0 found
30 - 50 miles 3 found
50 - 100 miles searching...
69
70
68

Fig. 6G

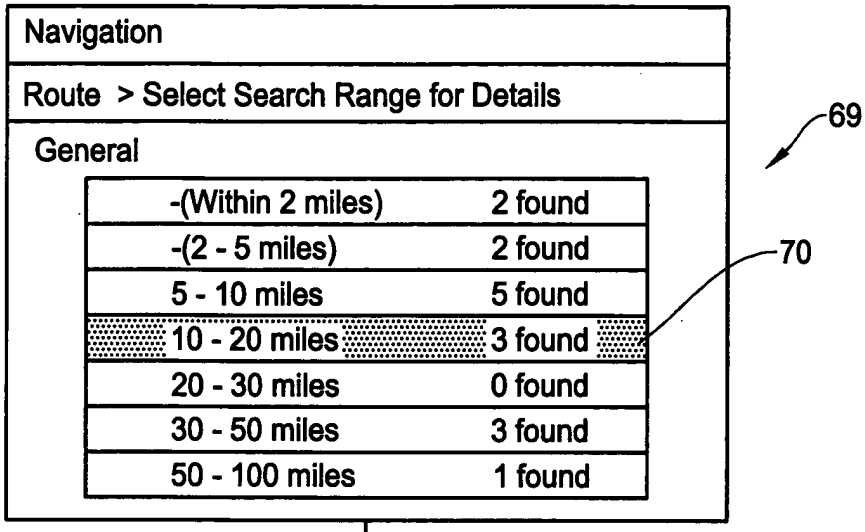

Navigation
Route > Select Search Range for Details
General
-(Within 2 miles) 2 found
-(2 - 5 miles) 2 found
5 - 10 miles 5 found
10 - 20 miles 3 found
20 - 30 miles 0 found
30 - 50 miles 3 found
50 - 100 miles 1 found
69
70

Fig. 6H

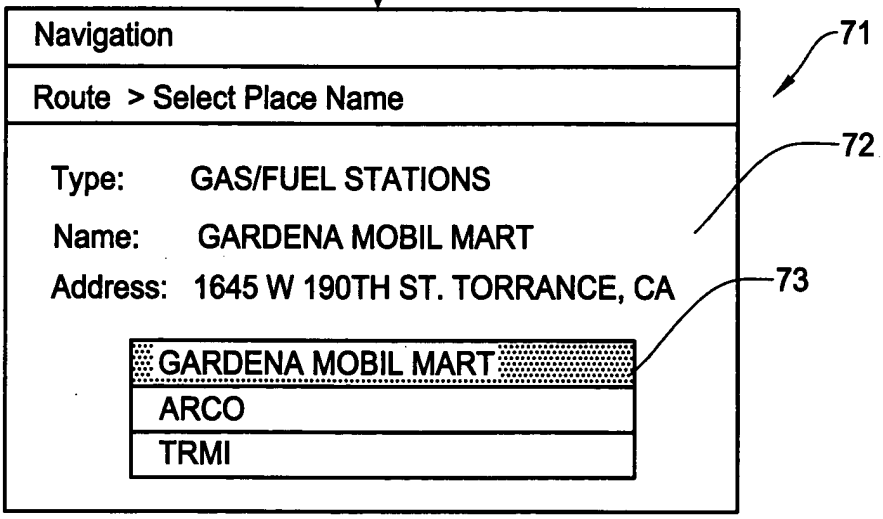

Navigation
Route > Select Place Name
Type: GAS/FUEL STATIONS
Name: GARDENA MOBIL MART
Address: 1645 W 190TH ST. TORRANCE, CA
GARDENA MOBIL MART
ARCO
TRMI
71
72
73

Fig. 7A

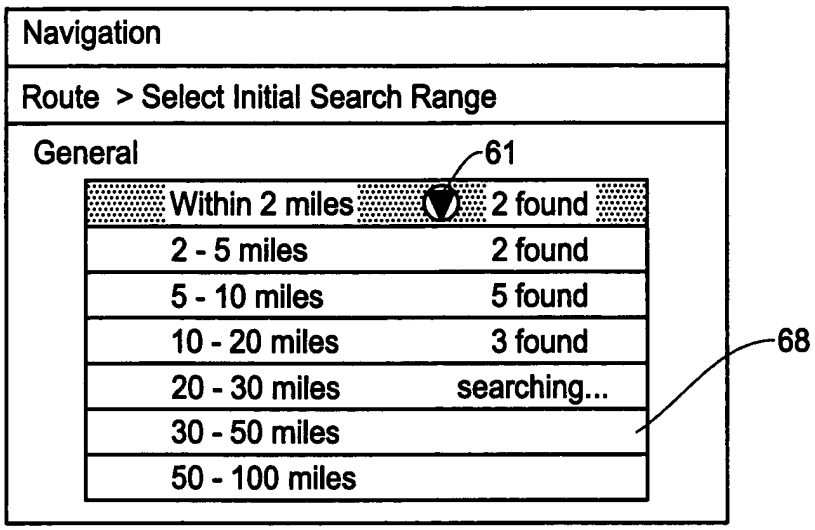

Navigation
Route > Select Initial Search Range
General
61
Within 2 miles
2 found
2 - 5 miles
2 found
5 - 10 miles
5 found
10 - 20 miles
3 found
20 - 30 miles
searching...
30 - 50 miles
50 - 100 miles
68

Fig. 7B

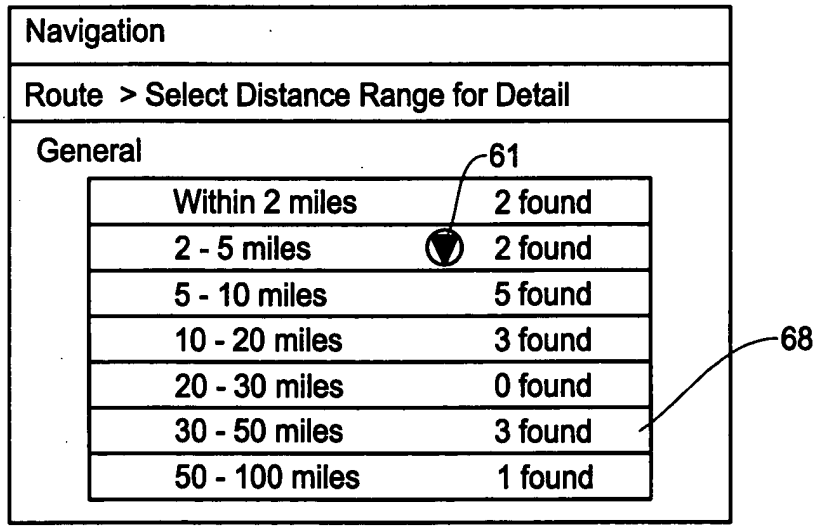

Navigation
Route > Select Distance Range for Detail
General
61
Within 2 miles
2 found
2 - 5 miles
2 found
5 - 10 miles
5 found
10 - 20 miles
3 found
20 - 30 miles
0 found
30 - 50 miles
3 found
50 - 100 miles
1 found
68

Fig. 7C

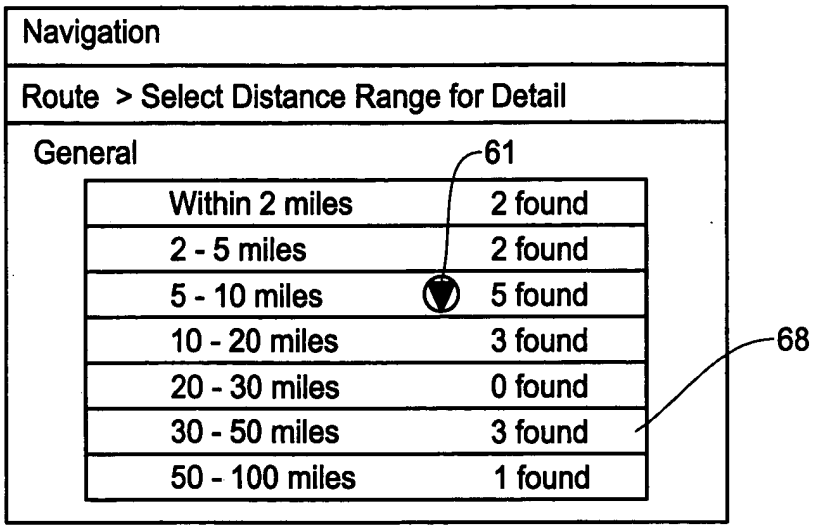

Navigation
Route > Select Distance Range for Detail
General
61
Within 2 miles
2 found
2 - 5 miles
2 found
5 - 10 miles
5 found
10 - 20 miles
3 found
20 - 30 miles
0 found
30 - 50 miles
3 found
50 - 100 miles
1 found
68

Fig. 7D

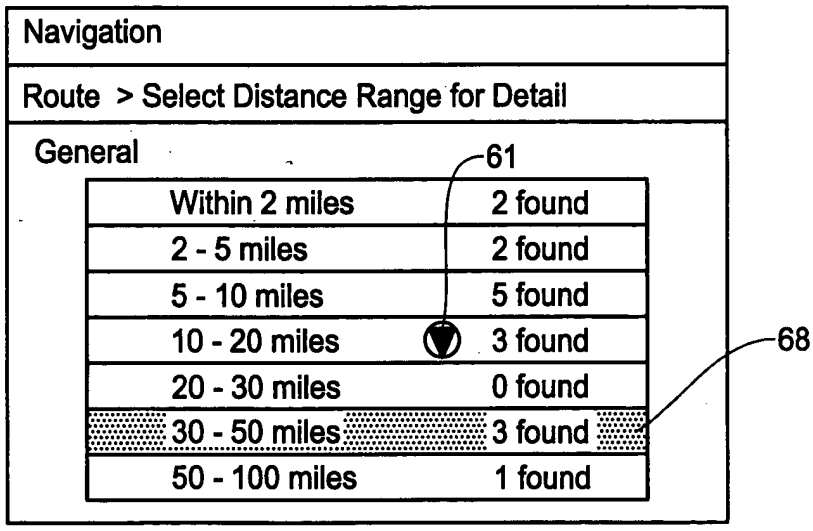

Navigation
Route > Select Distance Range for Detail
General
61
Within 2 miles
2 found
2 - 5 miles
2 found
5 - 10 miles
5 found
10 - 20 miles
3 found
20 - 30 miles
0 found
30 - 50 miles
3 found
50 - 100 miles
1 found
68

Fig. 8A

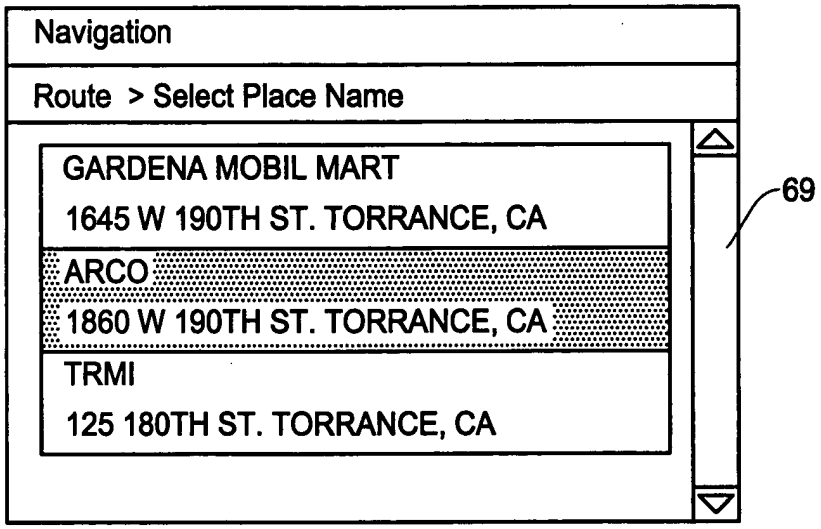

Navigation
Route > Select Place Name
GARDENA MOBIL MART
1645 W 190TH ST. TORRANCE, CA
ARCO
1860 W 190TH ST. TORRANCE, CA
TRMI
125 180TH ST. TORRANCE, CA
69

Fig. 8B

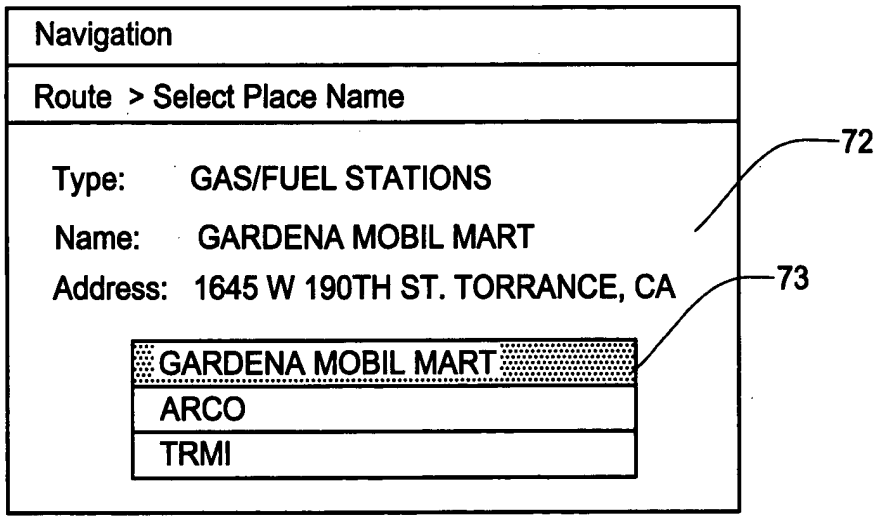

Navigation
Route > Select Place Name
Type: GAS/FUEL STATIONS
Name: GARDENA MOBIL MART
Address: 1645 W 190TH ST. TORRANCE, CA
GARDENA MOBIL MART
ARCO
TRMI
72
73

Fig. 9A

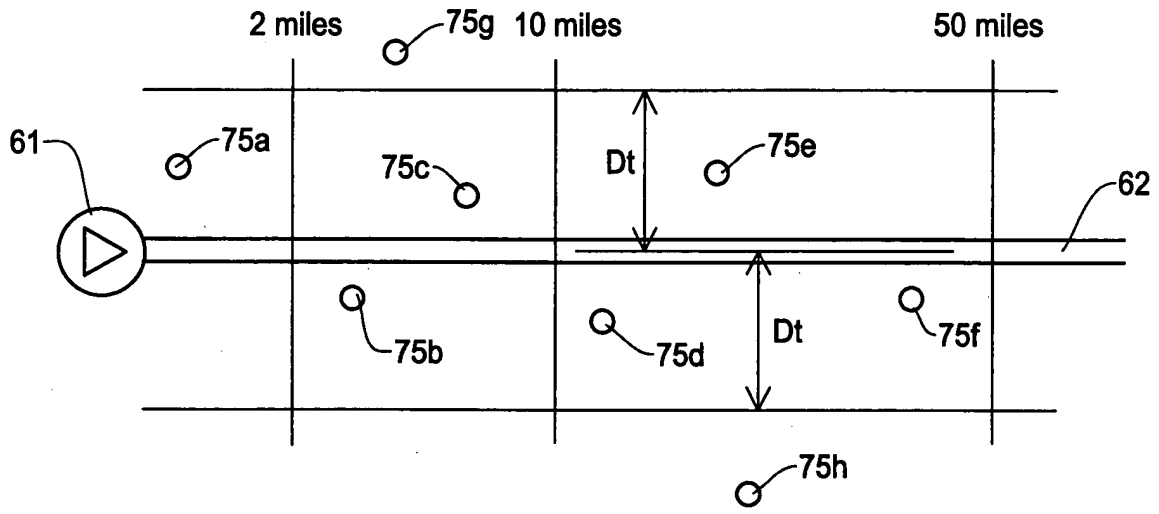

2 miles
75g
10 miles
50 miles
61
75a
75c
Dt
75e
62
75b
75d
Dt
75f
75h

Fig. 9B

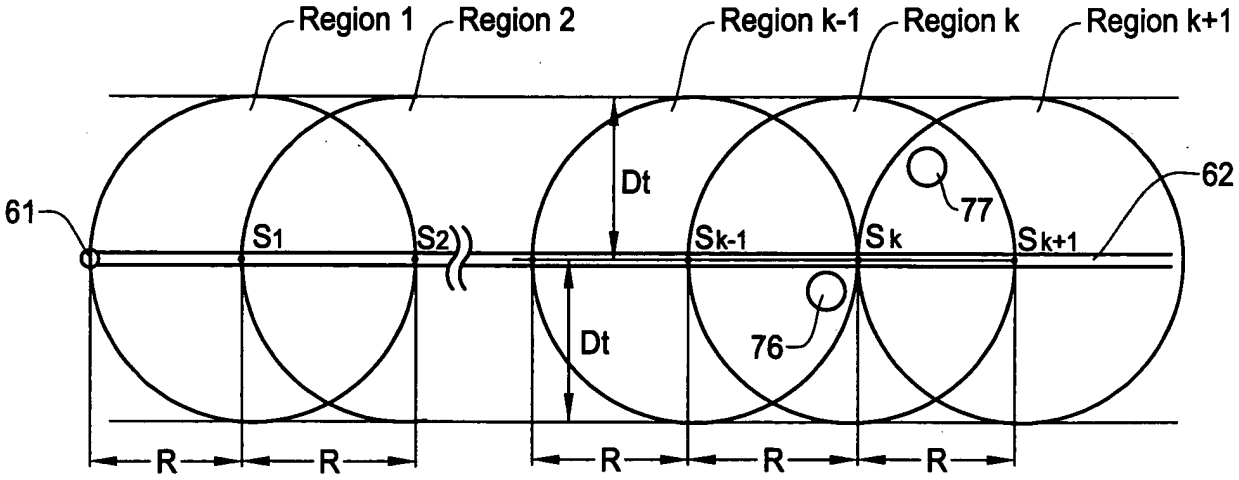

Region 1
Region 2
Region k-1
Region k
Region k+1
61
S1
S2
Dt
Sk-1
Sk
77
Sk+1
62
Dt
76
R
R
R
R
R

Fig. 10A

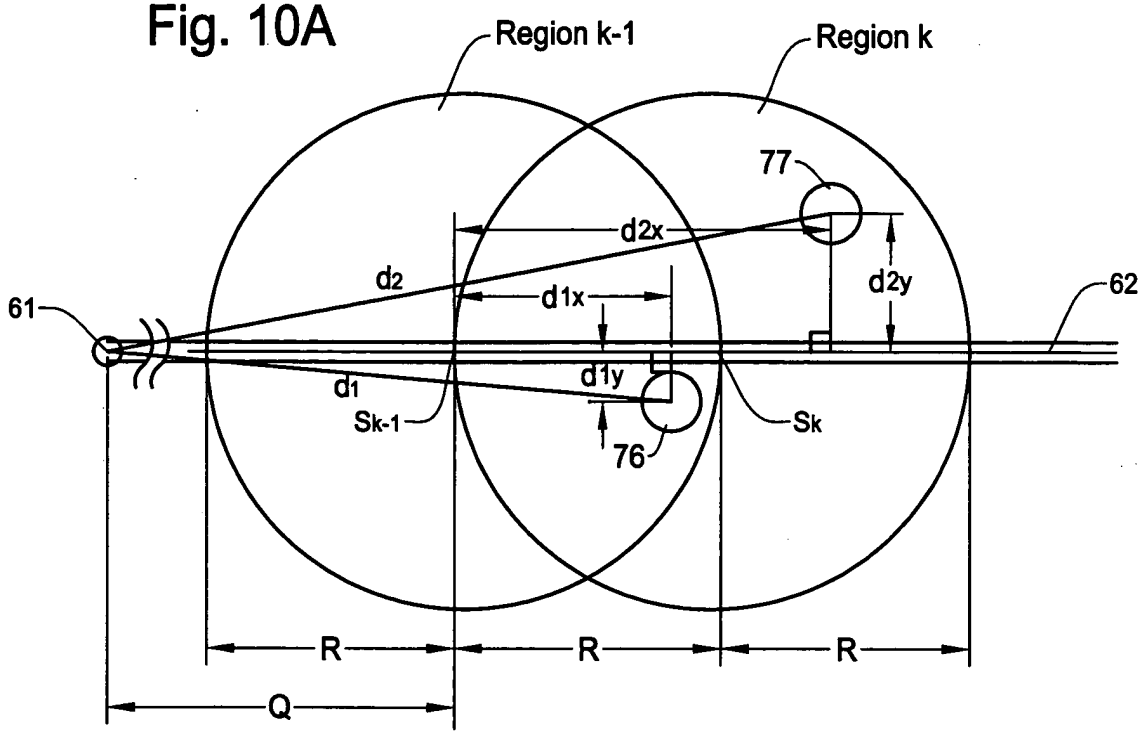


Fig. 10B

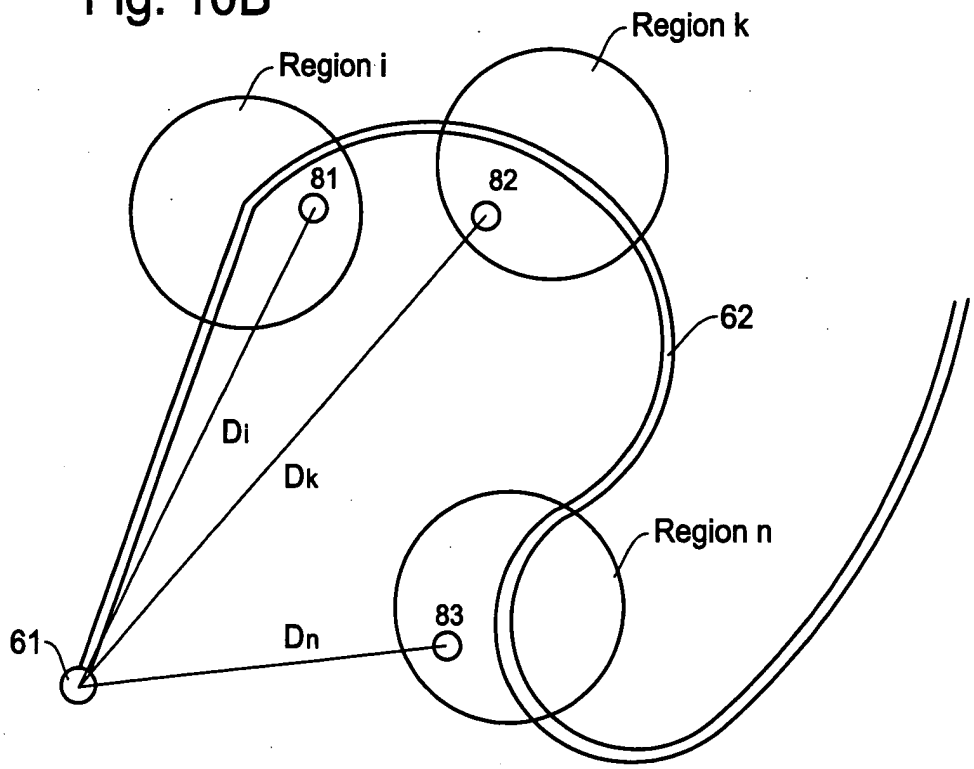


Fig. 11A

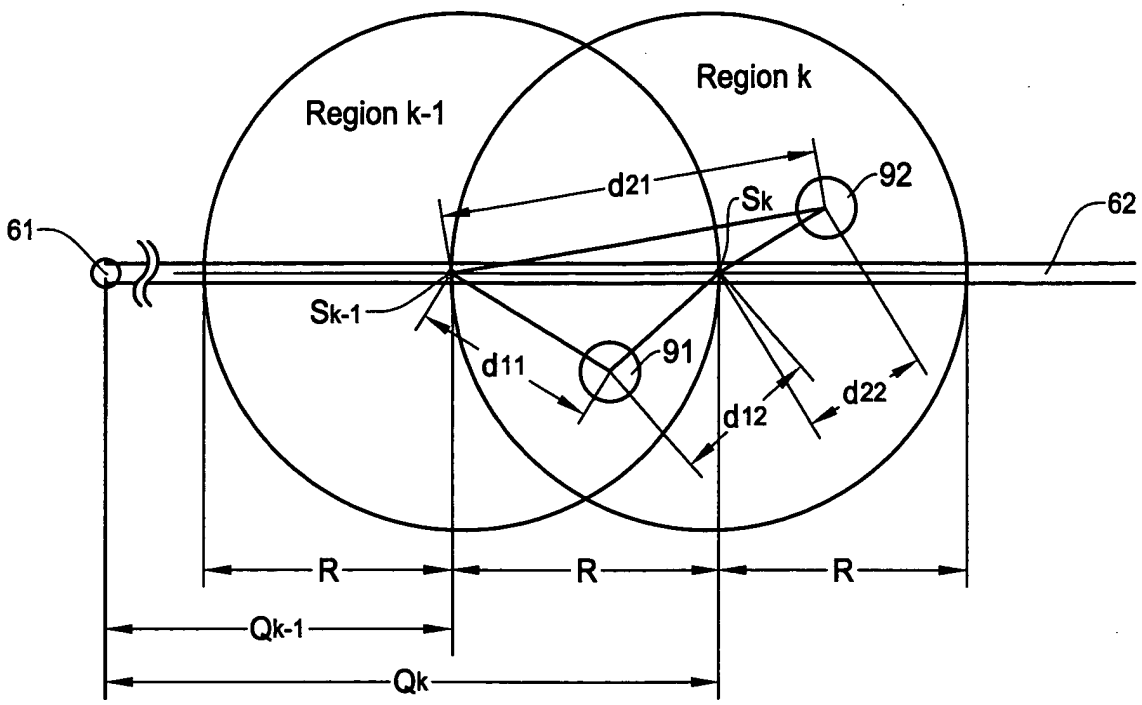


Fig. 11B

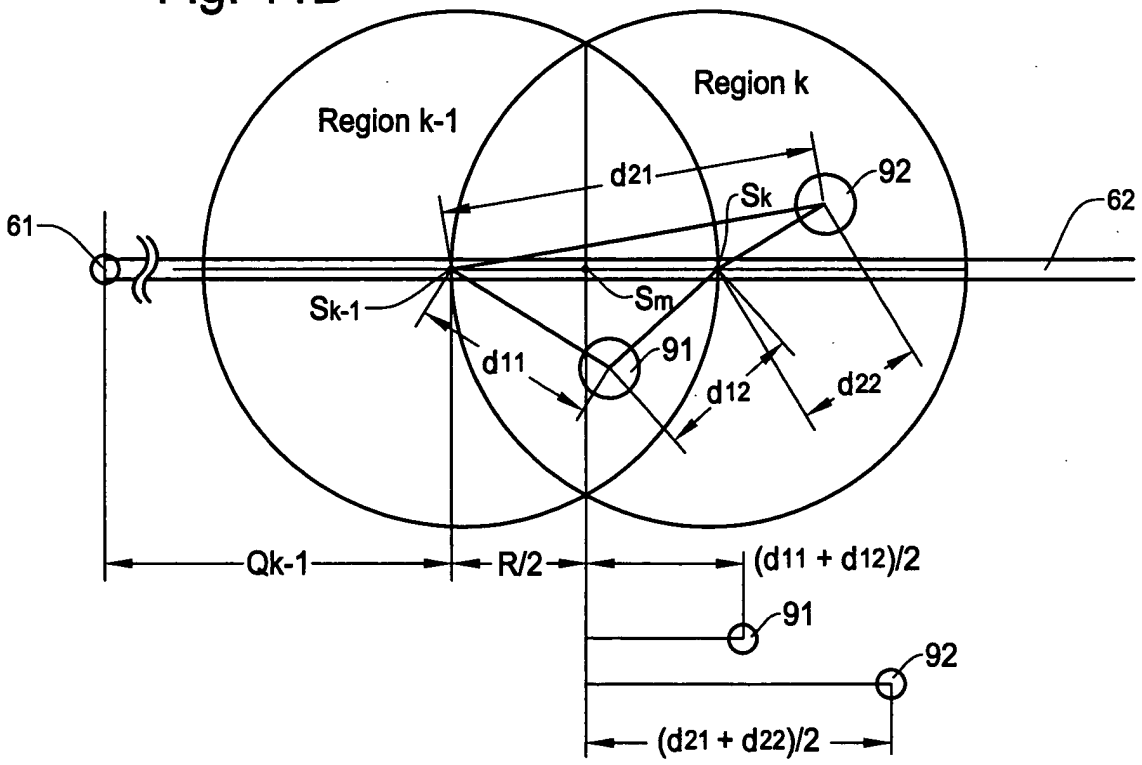


Fig. 12

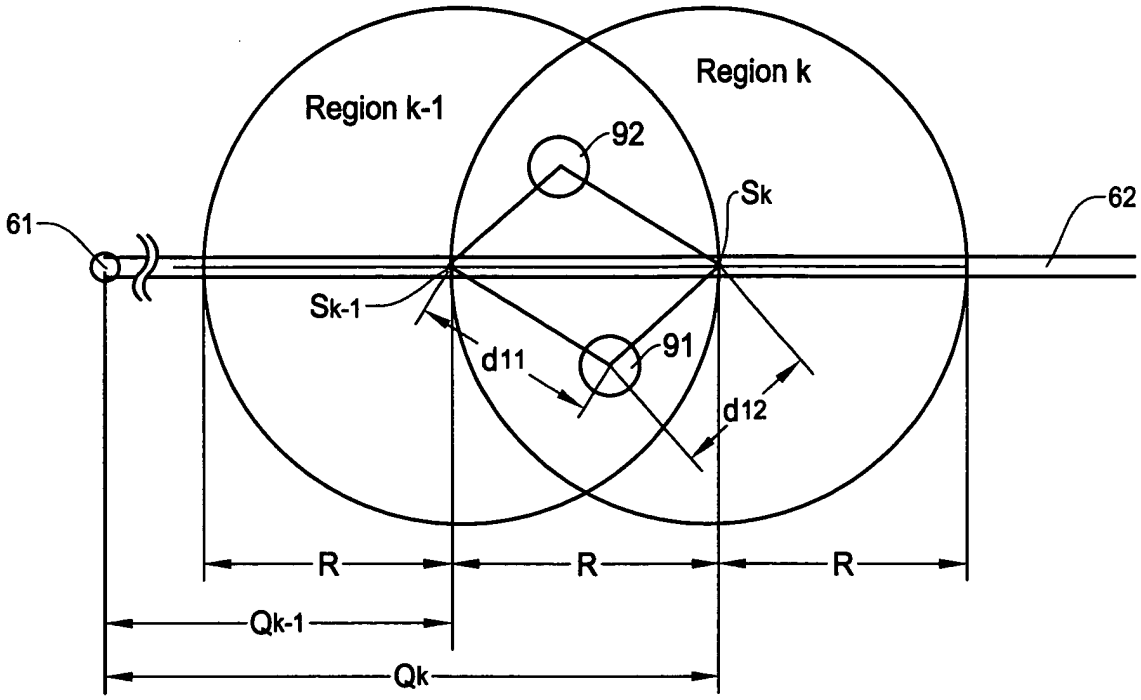

Region k-1
Region k
92
Sk
61
62
Sk-1
d11
91
d12
R
R
R
Qk-1
Qk

Fig. 13

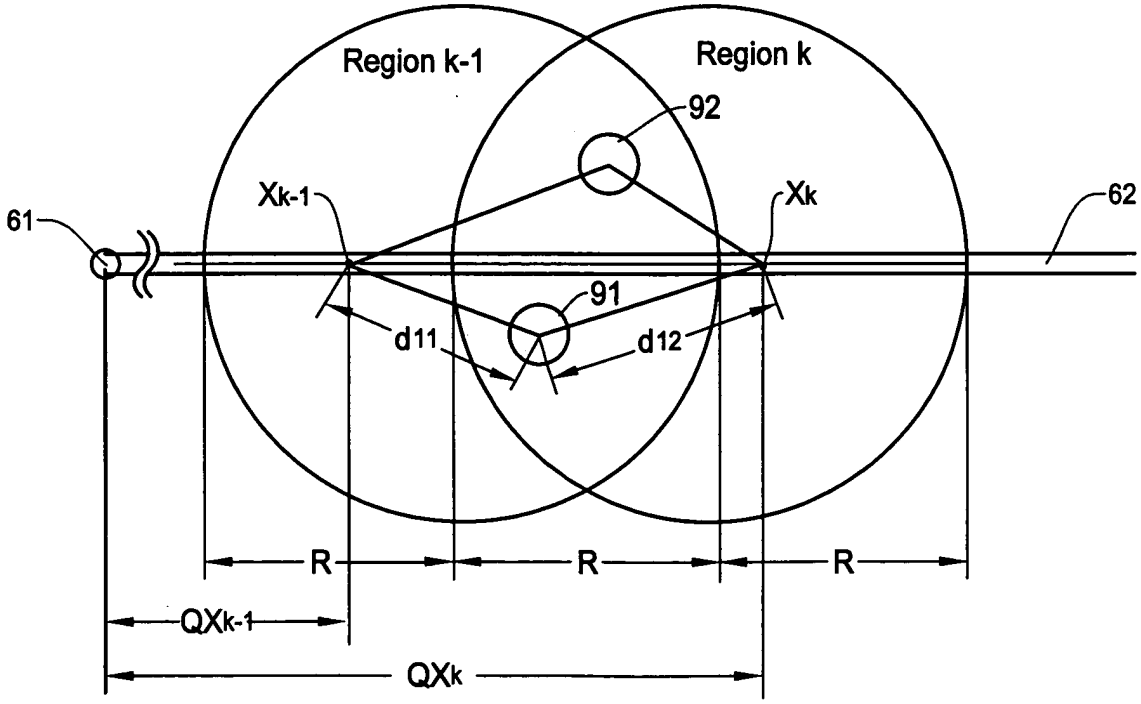
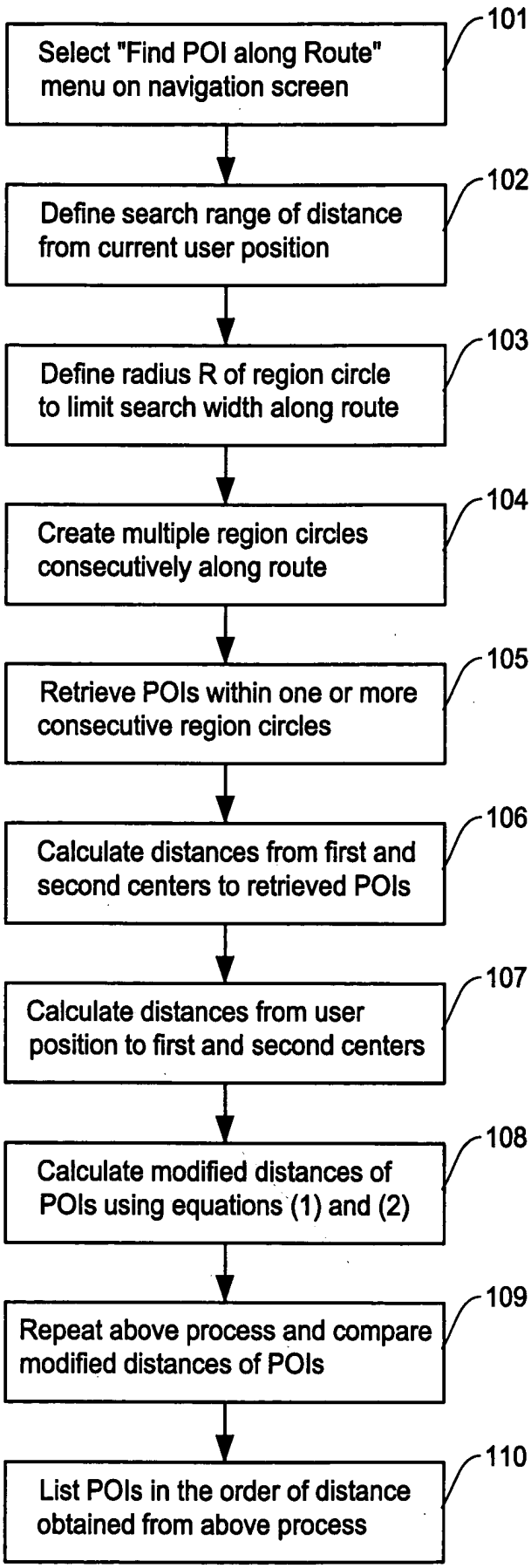

Region k-1
Region k
92
Xk-1
Xk
61
62
91
d11
d12
R
R
R
QXk-1
QXk

Fig. 14


Select "Find POI along Route" menu on navigation screen
101
Define search range of distance from current user position
102
Define radius R of region circle to limit search width along route
103
Create multiple region circles consecutively along route
104
Retrieve POIs within one or more consecutive region circles
105
Calculate distances from first and second centers to retrieved POIs
106
Calculate distances from user position to first and second centers
107
Calculate modified distances of POIs using equations (1) and (2)
108
Repeat above process and compare modified distances of POIs
109
List POIs in the order of distance obtained from above process
110